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Quality of Nursing Care Providing in Neonatal Intensive Care Units in Minia University Hospital

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Abstract:
The advancements in intensive care in recent decades have enabled better survival of full spectrum of newborns Quality in nursing as a process, which seeks to attain the highest degree of excellence in the delivery of patient care. **The aim** of this study was to assess quality of nursing care provided in NICU in Minia University Hospital. The subjects of the present study consisted of 32 nurses working in Neonatal Intensive Care Unit and responsible for providing direct care for newborn. Two tools were used to collect data:**Tool I: Structured interview questionnaire**and **Tool II Observational check list**to assess nurses' knowledge and actual performance of nurses providing direct care for neonates in Neonatal Intensive Care Unit. Data collection carried out in the period between May to September 2016. **The results**. Showed that, the mean age was 27.25 ±8.69; more than one third of them (35%) were have Baccalaureate degree education. Nearly half of them did not Attending special course/training about neonatology (51.6%). In addition, the majority of the studied nurses were married (68%), more than (32%) of them were have 5 Years of experiences and about (65%) were Pleasure from their carrier.Nurses' knowledge about neonatal care. It revealed that more than half ofthe studied nurses had poor knowledge related to knowledge about neonatal care (52.2%, 24% and 23.8% respectively).More than half of the studied nurses showed poor performance related to neonatal care (54.3%), while only (23.7%) showed correct performance about neonatal care. **Conclusion**: it can be concluded that nurses have an around average of knowledge and quality of practice regarding total score of knowledge and practice related to care provided in NICU AT Minia university hospital. Recommendations: Based on the results of this study, it recommended the following: Raising the awareness of nurses in NICU about the efficient care provided by the nurses to the neonate in the intensive care unit at Minia university Hospital up to discharge.

Keywords: Quality of Nursing Care, Neonatal Intensive Care.

Introduction

Neonatal phase is a highly vulnerable time for a child dealing with many of the physiological adjustments needed for extra uterine life. The neonatal mortality rate represents the quality of care available to women during pregnancy, as well as the quality of care available to children during the first month of life. **World Health Organization (WHO,2009).**

High Risk Neonate (HRN) described by **Spear (2010)** as any neonate at risk of experiencing medical, developmental or physiological problems. Every neonate vulnerable to morbidity and mortality due to dysmaturity, immaturity, physical abnormalities or complications during or after birth is known to be HRN, **according to Blackburn (2010).** A professional multidisciplinary team, including doctors, nurses, respiratory therapists, dietitians, and physical therapists, need collaborative efforts **(Smith, et al, 2009).**

Maintaining and enhancing patient care requires the active involvement of everyone in the health care system to meet the needs for the overall assessment of health care as well as to decide if successful and adequate treatment has been given. Quality is "the main component of neonatal health care, and it needs nurses to be involved in providing care. **Dalia, 2011).**

Each year 62,000 newborn babies die and an extra. Most of these babies die from preventable or treatable causes, and it is estimated that up to two thirds could be prevented if vital treatment reached all newborns. Newborn babies account for more than 40 percent of deaths among children under the age of five. The Lancet Newborn Series **(Darmstadt et al., 2005)** emphasizes critical newborn care as a means of reducing infant deaths, including hygienic cord treatment, warmth management and immediate and feeding. All of the reported newborn care procedures are easy to execute and limited resource use.

The health care worker in general, and nurses in particular, play a vital role in ensuring that the baby has sufficient nursing care and that the nurse is aware of the potential complications and is alert to the changing state of the child. The nurse is the first health care provider after admission to have direct contact with the neonate. Therefore, nurses need the knowledge and skills . All staff have undergone appropriate training to their function, helping mothers to properly feed their babies, preparing babies and families for discharge, supporting families in

gaining the knowledge and skills they need to care for their baby at home, identifying developmental needs, providing family emotional and psychological support, safeguarding children and supporting families during bereavement.**(Institute of Medicine, 2010)**

Healthcare quality is described as providing the best possible care and achieving the best possible outcomes for individuals if they deal with the healthcare system or use their services. Essentially, it means doing the best possible job with the resources available. It is characterized as meeting or exceeding the expectations of the customers and fulfilling them. It is always the result of high purpose, sincere intentions, good direction and skillful execution, and is the wise choice of many alternatives. **(Agency for Health Care Researcher and Quality, 2010)**.Each nurse is accountable for her own quality of performance and is responsible for the use standards to ensure knowledge, safe and comprehensive nursing care **(American Nurses Association, 2009).**

Improving quality is a major focus of neonatal health care. This aims to improve the outcomes of neonatal health care and related activities that lead to neonatal care nurses as the primary caregivers in any health care system impact patients ' lives directly and profoundly and are vital to the quality of care provided by patients. **(National Quality Forum, 2011; McLaughlin & Kaluzny, 2011)**. In addition, quality improvement approaches are categorized into six performance areas that could affect health care processes and outcomes as consistent provision of adequate and efficient treatment, reduction of unjustified geographical disparity care, elimination of avoidable errors, reduction of barriers to access, improvement of client responsiveness and elimination of racial / ethnic, gender, socio-economic and other disparities, and inequalities in access and treatment**(Leatherman & McCarthy, 2012).**

Monitoring and improving the quality of care has become a priority issue for each health organization, as well as ensuring adequate access to care and cost control. The increased interest in quality of care assessment and reporting has intensified efforts to develop quality metrics that can evaluate quality performance at multiple Examples of care provided by individual doctors or groups of doctors, clinics, health plans, regions and even countries (**Epstein and Leatherman,2006).**

Significant of the study:
Nurses have an important, enabling role to provide neonatal care in neonatal intensive care unit. There must be a high percentage of interpersonal skills in the care of the neonate in addition to being technically competent. In addition, Evaluation is one of the most critical phases of the nursing process because it supports the basis of the usefulness and effectiveness of nursing practice. In addition, it is known that nursing services are the backbone of the healthcare system in almost all countries in the world. They represent between 60 to 70% of the health personnel So, It is thus important that we assess quality of nursing care we offer in order to improve on it. Also, was found that there is a relationship between quality of care and performance of nurses in the neonatal unit (Abdel-Kareem, 2008). Therefore, nurses will never know the quality of care they offer until it is being assessed. This study measures quality of care provides, will provide a means of evaluating the care and will provide suggesting recommendations for its improvement.

Aim of the study
This study aimed to assess quality of nursing care provided in NICU in Minia University Hospital

Research questions:
1-What is the current level of knowledgeregarding care provided from admission up to discharge?
2-What is the current level of practiceregarding care provided from admission up to discharge?

Methodology:
A Descriptive observational research design was utilized to achieve the aim of the study. The study was conducted at the Neonatal Intensive Care Unit in Minia University Hospital. Aconvenient sampling technique was utilized, and total number sample size (32 nurses). Eligibility criteria included, each nurse working in NICU department at Minia University Hospital. Sample included, neonates admitted to the unit at the time of research without serious complication. The study assessed quality of nursing care provided in NICU in Minia University Hospital using a structured interview questionnaire and observational checklist.In this study, the quality achieved is evaluated by comparing what was actually achieved with the targets set criteria for quality of care must be provided.. Data collection carried out in the period between May to September 2016.Ethical approval was sought from the Minia Research Ethics Committee. Permission to implement the research was granted by the manager of the Minia University Hospital, as well as, the nursing staff. Prior to the distribution of questionnaires to the respondents, they were oriented about the study process and the most proficient method to

fill out the questionnaire with utmost honesty. The research analysts dispensed the questionnaire during the start of their work. Regarding the practices about neonatal care, it was done three days per week to collect the data. Three nurse were recruited per day according to their work duties.

Tools for Dada collection:

Two tools were be used in this study

Tool I: Structured interview questionnairewas designed and include the following items:

1. Personal demographic data including , age , Education, Attending special course/training neonatology, Marital status, Years of experiences, Pleasure from carrier
2. Nurses' knowledge about neonatal care, It consists of 12 items contains questions related to nurses knowledge about care of the newborn with multiple form of qualitative and quantitative data, some questions responded by yes or no, other questions were a multiple choices or open end questions. Regarding neonatal care items,it included high-risk neonates, Infection control, Suction, Ventilator, Control body temperature, Kangaroo care, Nutrition, Diaper care, cord care, Support parents, and Palliative care. Every question related to knowledge, was rated as poor, fair or good knowledge according to its content items, then the total score was calculated from 36 degree and classified into good knowledge (<27) fair knowledge (21-27) and poor knowledge >21

Tool II Observational check list:

It formulated based on standard intervention to be performed by the health personal Standards of Performance of the Neonatal Intensive Care For nurses. It was prepared using Neonatal Nursing: Scope and Standards of Practice, published by the American Nurses Association (ANA) consists of different tasks that are to be performed in the intensive care unit delivery checked by done fair, done poor or not done. The total quality score was calculated by converting score into percentage % of performed care as follows. Done good < 75%, done fair 74-51% and done poor < 50%.The tools were prepared and reviewed to ascertain their content validity by five experts in Pediatric nursing and medicine. The recommended modifications were done accordingly, and then the tools were designed in its final format. The validity was 97.6%. The reliability was assessed in the pilot study and it was estimated by Alpha Cronbach's test for the tool and its result was R=0.76.The findings from validity and reliability suggested that the current questionnaire and observational check list could be used as a viable tool for data collection in this study.

Pilot study was carried out including 5nurses to assess the tool clarity, applicability, and time needed to fill each sheet. The participants of the pilot study were excluded from the main study sample.

Procedure:

Fieldwork was done three days per week to collect the data. Three to five nurses were recruited per day according to their work duties.

Statistical Analysis:

After completing of the fieldwork, data were processed, extensively reviewed. Each answer sheet was coded and scored, So that data could be prepared for computer use. Data were statistically analyzed using SPSS Version 16.0 statistical software packages. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and cross tabulation variables. Test of significance was used and level of significance is $P < 0.05$, is used if P value is less than 0.01, it was highly significance if P value is < 0.001. Limitations of the study: Small number of nurses participated the study was studied.

Results :

Table (1) biosocial characteristics of studied nurses at Minia University hospital

Personnel characteristics	No	%
Age in years		
Up to 20	11	35.5
Up to 30 year	9	29.0
40-50	10	32.3
More than 50 years	1	3.2
Mean ±SD	27.25 ±8.69	
Education		
Baccalaureate degree	11	35.5

Technical degree	10	32.3
Secondary Nursing	10	32.3
Attending special course/training neonatology		
Yes	15	48.4
No	16	51.6
Marital status		
Married	21	67.7
Single	10	32.3
Years of experiences		
5	10	32.3
10	10	32.3
15	6	19.4
20 and more	5	16.1
Pleasure from carrier		
Yes	20	64.5
No	11	35.5

Table (1) Distribution of biosocial characteristics of studied nurses" The mean age was 27.25 ±8.69; more than one third of them (35%) were have Baccalaureate degree education. Nearly half of them didn't Attending special course/training about neonatology (51.6%). In addition,the majority of the studied nurses were married (68%), more than (32%) of them were have 5 Years of experiences and about (65%) were Pleasure from their carrier.

Table (2) Nurses knowledge about neonatal care

Knowledge about neonatal care		Incorrect	Correct and incomplete	correct and complete	Mean±SD
Define high risk neonates	N	17	6	8	1.71±0.86
	%	54.8	19.4	25.8	
Infection control	N	14	9	8	1.81±0. 83
	%	45.2	29.0	25.8	
Suction	N	16	8	7	1.71±0. 82
	%	51.6	25.8	22.6	
Ventilator	N	16	8	7	1.71±0. 82
	%	51.6	25.8	22.6	
Control body temperature	N	14	10	7	1.77±0. 80
	%	45.2	32.3	22.6	
Kangaroo care	N	20	5	6	1.55±0. 81
	%	64.5	16.1	19.4	
Nutrition	N	15	7	9	1.81±0. 87
	%	48.4	22.6	29.0	
Diaper care	N	17	7	7	1.68±0. 83

	%	54.8	22.6	22.6	
Cord care	N	15	8	8	1.77±0. 84
	%	48.4	25.8	25.8	
Support parents	N	17	7	7	1.68±0. 83
	%	54.8	22.6	22.6	
Palliative care	N	17	6	8	1.71±0. 86
	%	54.8	19.4	25.8	
Total-Knowledge	**N**	**16**	**7**	**7**	**1.72±0. 84**
	%	**52.2**	**23.8**	**24.0**	

As regarding Nurses knowledge about care provided for newborn**Table (2).**It can be concluded that Good and poor nurse's knowledge about care provided for newborn nearly distributed (24%& 52.2%).

Table (2) Nurses'Performance about neonatal care.

Performance about neonatal care		Incorrect	Correct and incomplete	correct and complete	Mean±SD
Infection control	N	17	6	8	1.71±0. 86
	%	54.8	19.4	25.8	
Daily care	N	16	8	7	1.71±0. 82
	%	51.6	25.8	22.6	
Measurement	N	18	7	6	1.61±0. 80
	%	58.1	22.6	19.4	
Phototherapy	N	18	6	7	1.65±0. 84
	%	58.1	19.4	22.6	
Intravenous therapy	N	18	6	7	1.65±0. 84
	%	58.1	19.4	22.6	
Gavage feeding	N	16	8	7	1.71±0. 82
	%	51.6	25.8	22.6	
Oxygen therapy	N	18	6	7	1.68±0. 84
	%	58.1	19.4	22.6	
Pulse oximetry	N	17	7	7	1.65±0. 83
	%	54.8	22.6	22.6	
Suction	N	18	6	7	1.81±0. 84
	%	58.1	19.4	22.6	

Measurement	N	14	9	8	1.74±0. 83
	%	45.2	29.0	25.8	
Ventilator	N	16	7	8	1.65±0. 83
	%	51.6	22.6	25.8	
Communication	N	16	6	9	1.77±0. 86
	%	51.6	19.4	29.0	
Total-Performance	**N**	**17**	**7**	**7**	**1.69**±0. 84
	%	**54.3**	**22.0**	**23.7**	

According to**nurses' Performance about neonatal care (table 2),** it was shown that
More than half of the studied nurses showed poor performance related to neonatal care (54.3%), while only (23.7%)showed correct performance about neonatal care

Figure (2) Nurses' performance about neonatal care.

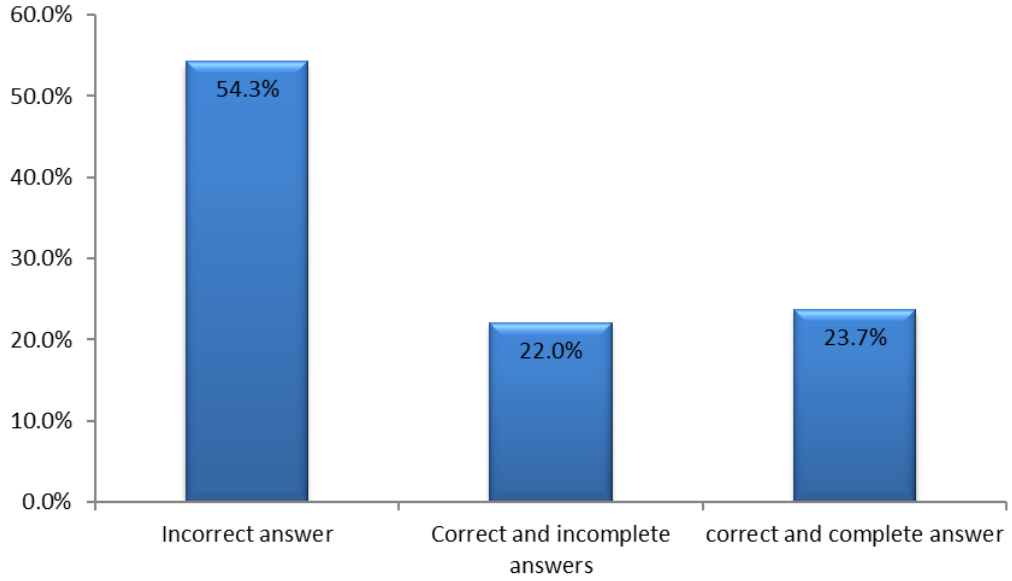

Figure (2) Nurses' performance about neonatal care it was shown that more than half of the studied nurses showed poor performance related to neonatal care (54.3%), while only (23.7%) showed correct performance about neonatal care

Figure (3) the correlation between Knowledge about neonatal care and Performance about neonatal care.

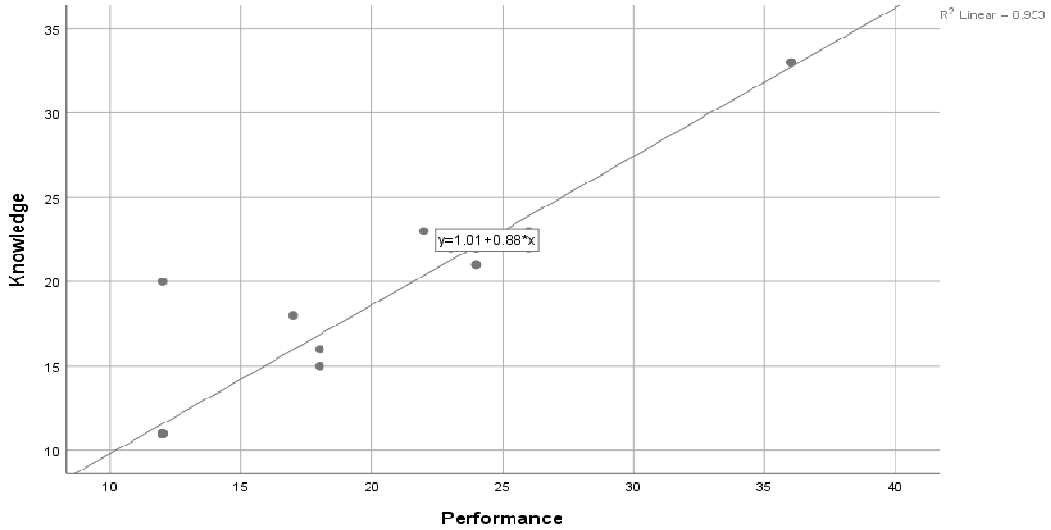

Figure (3) shows correlation between Knowledge and Performance about neonatal care. It showed a positive correlation between nursing knowledge and performance about neonatal care p= 0.01.

Table (3) Relationship between biosocial characteristics of studied nurses at Minia University hospital and Knowledge about neonatal care.

biosocial characteristics of studied nurses			Knowledge about neonatal care			Total	Chi-Square	P.Value
			Incorrect answer	Correct and incomplete answers	correct and complete answer			
Age	Up to 20	N	7	2	2	11	3.067[a]	0.800
		%	63.6%	18.2%	18.2%	100.0%		
	Up to 30 year	N	3	4	2	9		
		%	33.3%	44.4%	22.2%	100.0%		
	40-50	N	5	3	2	10		
		%	50.0%	30.0%	20.0%	100.0%		
	More than 50 years	N	1	0	0	1		
		%	100.0%	0.0%	0.0%	100.0%		
Education	Baccalaureate degree	N	7	3	1	11	4.621[a]	0.328
		%	63.6%	27.3%	9.1%	100.0%		
	Technical degree	N	6	3	1	10		
		%	60.0%	30.0%	10.0%	100.0%		
	Secondary Nursing	N	3	3	4	10		
		%	30.0%	30.0%	40.0%	100.0%		
Attending special course/training neonatology	yes	N	11	1	3	15	7.670[a]	0. 22
		%	73.3%	6.7%	20.0%	100.0%		
	No	N	5	8	3	16		
		%	31.3%	50.0%	18.8%	100.0%		
Marital status	Married	N	9	6	6	21	0.147	0.147
		%	42.9%	28.6%	28.6%	100.0%		
	Single	N	7	3	0	10		
		%	70.0%	30.0%	0.0%	100.0%		

Years of experiences	5	N	8	1	1	10	8.439[a]	0.208
		%	80.0%	10.0%	10.0%	100.0%		
	10	N	5	4	1	10		
		%	50.0%	40.0%	10.0%	100.0%		
	15	N	1	3	2	6		
		%	16.7%	50.0%	33.3%	100.0%		
	20 and more	N	2	1	2	5		
		%	40.0%	20.0%	40.0%	100.0%		
Pleasure from carrier	yes	N	11	7	2	20	3.365[a]	0.186
		%	55.0%	35.0%	10.0%	100.0%		
	No	N	5	2	4	11		
		%	45.5%	18.2%	36.4%	100.0%		

Concerning the relationship between biosocial characteristics of studied nurses at Minia University hospital and Knowledge about neonatal care**(table 3);** it was pointed that no statistically significant relation could be found between total knowledge score level and demographic characteristics.

Table (4) Relationship between biosocial characteristics of studied nurses at Minia University hospital and performance about neonatal care

biosocial characteristics of studied nurses			Knowledge about neonatal care			Total	Chi-Square	P.Value
			Incorrect answer	Correct and incomplete answers	correct and complete answer			
Age	Up to 20	N	8	1	2	11	4.786a	0.572
		%	72.7%	9.1%	18.2%	100.0%		
	Up to 30 year	N	3	4	2	9		
		%	33.3%	44.4%	22.2%	100.0%		
	40-50	N	5	3	2	10		
		%	50.0%	30.0%	20.0%	100.0%		
	More than 50 years	N	1	0	0	1		
		%	100.0%	0.0%	0.0%	100.0%		
Education	Baccalaureate degree	N	8	2	1	11	5.453a	0.244
		%	72.7%	18.2%	9.1%	100.0%		
	Technical degree	N	6	3	1	10		
		%	60.0%	30.0%	10.0%	100.0%		
	Secondary Nursing	N	3	3	4	10		
		%	30.0%	30.0%	40.0%	100.0%		
Attending special course/training neonatology	yes	N	11	1	3	15	5.945a	0.051
		%	73.3%	6.7%	20.0%	100.0%		
	No	N	6	7	3	16		
		%	37.5%	43.8%	18.8%	100.0%		
Marital status	Married	N	9	6	6	21	4.754a	0.093
		%	42.9%	28.6%	28.6%	100.0%		
	Single	N	8	2	0	10		
		%	80.0%	20.0%	0.0%	100.0%		
Years of experiences	5	N	8	1	1	10	8.072a	0.233
		%	80.0%	10.0%	10.0%	100.0%		
	10	N	6	3	1	10		
		%	60.0%	30.0%	10.0%	100.0%		
	15	N	1	3	2	6		
		%	16.7%	50.0%	33.3%	100.0%		
	20 and more	N	2	1	2	5		
		%	40.0%	20.0%	40.0%	100.0%		

Pleasure from carrier	yes	N	12	6	2	20	3.206a	0.201
		%	60.0%	30.0%	10.0%	100.0%		
	No	N	5	2	4	11		
		%	45.5%	18.2%	36.4%	100.0%		

As regarding the relationship between biosocial characteristics of studied nurses at Minia University hospital and Knowledge about neonatal care **(table 4);** it was illustrated thatno statistically significant relation could be found between total knowledge score level and demographic characteristics.

Discussion:

Maintaining and improving neonatal care requires active involvement of everyone in health care system, in order to meet the needs for evaluating health care in its totality as well as to identify whether effective and appropriate care has been provided. **(Needleman and Kenneth, 2008).** The purpose of this study was to assess the quality of care provided by the nursing personnel in the neonatal intensive care unit to the newborn babies' from admission and up to discharge.The current study is figuring out that, nearly half of studied nurses did notattending special course/training about neonatology (51.6%). Same results was in the same line with **(Abd El Fattah and El Dein, 2012)** who mentioned that, most of nurses didn't attend any previous in-service training program related to neonatal care at NICU .

Regarding Nurses knowledge about care provided for the newborn. The present study revealed that, half of the nurses had poor knowledge related to neonatal care. It may be due to more than half of them did not attain any training courses about neonatal care. This finding may be attributed to the shortage of nurses' number, absence of continuing education department in the hospital and lack of motivation for training, as well as increased workload in Neonatal Intensive Care Unit. This result was consistent with **Mike, et al., (2009)**who found that the poor quality of knowledge and care offered in neonatal intensive care in many hospitals has been widely reported.Therefore,its important nowis to define interventions that might improve nurses' knowledge and practice to improve their performance and that enhanced neonatal safety. This finding supported by "**The British Association of Perinatal medicine (BAPM), 2001**which stated that "a lack of trained staff may lead to care that is unsafe."

Unfortunately, only one fifth of the studied nurses had correct performance about neonatal care,this poor level of performance could be related to the improper working environment and unclear cut-responsibilities among nurses. This is an evidence reflect the needs of those nurses for in-service program to fulfills those deficiency to reach the maximum quality of care provided to all neonates.Also, developing protocol and checklist, which will include all-important essential newborn care to be followed by the nurses. **In addition WHO (2006)** which stated that, there was inadequate nurses' knowledge and performance and attributed this deficiency to one or more of the following reasons as mentioned; lack of orientation program prior to work as well lack of nursing care conference during work, invariability of procedure, and books especially in the studied area, lack of supervision, and nurses' evaluation against identified standards of patient care. The result of the current study are in harmony with a study carried out by **Salem, (2006) w**ho reported that, half of the studied nurses gave correct responses when assessing their level of performance. Also, **Lake, et al., (2017)**study showed that a score of more than half of studied nurses was unsatisfactory regarding care provided for neonates**.**this is in contrast to the finding of. On the contrary, this finding disagreed with **Swart, et al., (2015)**, who reported that, almost three-quarters of nurses had good scores of performance.

The existing study reflectedthat there was a positive correlation between Knowledge and Performance about neonatal care with statistically significant differences(p= 0.01). This is supported by **Abd El Fattah and Zein El Dein, (2012)**who mentioned that more than half of nurses have a correlation between knowledge and practice for neonatal care. This is similarly in agreement with **(Mohammed, 2011),** who highlighted that, there was a positive correlation between nurses knowledge and practices related to care of the newborn

Finally, this study has several important findings that can be considered as a basis for more comprehensive studies on assessing the quality of nursing care providing in neonatal intensive care units in Minia University Hospital. As with any research, however, there are several limitations to this study that should be considered when interpreting our results. The results of this study regarding the quality of care provided by nurses in the intensive care unit could not be generalized because the study sample is small. Second,the study setting was a single NICU. Therefore, the findings should interpreted and generalized with caution.

Conclusion

It can be concluded that nurseshave an around average of knowledge and quality of practice regarding total score of knowledge and practice related to care provided in NICU AT Minia university hospital. This may be due to as mention in this study, inhibit the provision of quality care such as educational levels and lack of training

courses that nurses received.However, efforts will be taken in future researches to assess the consequences of lack of care on neonates' outcomes .

Recommendation

Based on the results of this study, it recommended the following: Raising the awareness of nurses in NICU about the efficient care provided by the nurses to the neonate in the intensive care unit at Minia university Hospital up to discharge

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